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EXAMINER

SAWAGED, SARI S

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/676,940	Applicant(s) BARSOUM ET AL.	
	Examiner SARI SAWAGED	Art Unit 2423	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 50,56-59,72,73,81-83 and 92-97 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 50,56-59,72,73,81 and 92-97 is/are rejected.
- 7) ☒ Claim(s) 82 and 83 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on July 7th, 2008 have been fully considered but they are not persuasive.

2. Applicant argues that Broughton fails to teach "determining whether auxiliary data is present in the frame by performing a field comparison on a plurality of segments of a first field and a plurality of corresponding segments of a second field for the frame", as recited in claim 56 (see Remarks page 2 paragraph 2); In that Broughton rather uses frequency detection to determine encoding.

The examiner respectfully disagrees. Broughton illustrates in figure 2B a method of modulating adjacent lines of a non-interlaced video frame with data (non interlaced means that there is one field per frame). A line in the frame is modulated with a higher luminance (line 44 of Fig. 2B) (compared to the original luminance of the line, original luminance is depicted in line 40 of Fig. 2A) and an adjacent line (line 46 of Fig. 2B) is modulated with a complementary lower luminance.

Broughton also discloses "By modulating alternate lines within consecutive fields, data may be encoded for transfer at the television's field rate, e.g. 60HZ in the case of National Television System Committee (NTSC) television broadcast." The NTSC television broadcast standard dictates that there are two fields per frame (as opposed to one field per frame, as in Fig. 2A and 2B) and 30 frames per second, hence the 60 HZ field rate mentioned by Broughton above.

The examiner understands "by modulating alternate lines within consecutive fields" to mean that one line of a first field is modulated, and a corresponding line of the second field (which is adjacent to the line from the first field) is modulated to complement the modulation of the line in the first field. "modulating alternate lines within consecutive fields" when applied to Fig. 2B would yield line 44 to be a line from a first field (which is modulated with a higher luminance) and line 46 would be a line from a second field (which is modulated with a lower, complementary luminance to line 44), all the lines from the first and second fields making up a frame.

Broughton discloses "determining whether auxiliary data is present in the frame by means of a level comparator 66 (level comparator 66 is disclosed in Fig. 3 as "66" as part of the receiver electronics, also see col. 8 ll. 25-44) which compares the high and low luminance modulation feature of adjacent lines via information received from a light sensitive diode 18 (optical transducer) "which optically couples luminance within its view...to a detector, or receiver electronics" (diode is disclosed in Fig. 3 as 18, also see col. 7 ll. 58-67). Broughton further discloses that "the time period over which comparator 66 is active is approximately equal to the time it takes the raster scan electronics to traverse fifteen horizontal lines" (col. 8 ll. 34-37), "thereby ensuring against a false indication of the presence of encoded data **within a field** that **happens to have adjacent horizontal lines of different luminance**, e.g. a horizontal boundary between high and low luminance features of a video image" (col. 8 ll. 28-33) (the examiner understands that in this example, Broughton is referring to a frame that is non interlaced

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(as shown in Fig 2 and discussed previously) because adjacent lines in the NTSC format are lines that are from the two "consecutive" fields in a frame.

As discussed previously, in the NTSC modulation scheme, where Broughton is "modulating alternate lines within consecutive fields", the fifteen adjacent lines that the comparator would be sampling would be lines from the two fields in the NTSC frame and therefore Broughton would be using the comparator to determine whether auxiliary data is present in the frame by performing a field comparison.

Broughton further discloses "higher data rates also may be achieved by the division of the viewing area 14c into multiple regions, each of which is subliminally modulated to encode one or more binary bits of data." See Co17 lines 50-54. The divided viewing area is detected by the use of multiple transducers. See Co17 lines 50-57. This implies that the first and second fields that make up a frame will be segmented into a plurality of segments, each segment being modulated independently to achieve the higher data rate. Broughton also discloses that any part of the viewable screen can be modulated without the need for a rectangular or a fixed shape (col. 13 ll. 17-32). Therefore in a NTSC modulation scheme where the viewable screen is segmented (as disclosed by Broughton) into a plurality of segments, the level comparator 66, would need to determine whether auxiliary data is present in each segment by performing a field comparison on a plurality of segments of a first field and a plurality of corresponding segments of a second field" since a segment of the screen can be modulated independent of the other segments.

Further, Claim 56 doesn't preclude frequency detection. Broughton discloses that the receiver electronics 56 analyze the electrical signal (received from the optical transducer diode 18 which is aimed at the screen and couples luminance within its view to a detector, or receiver electronics (col. 7 ll. 61-67)) for energy within a range around 7.867kHz because this is the frequency at which **luminance is modulated in the viewing area of a television screen**. Therefore, Broughton meets the limitation of claim 56 for the reasons discussed above.

3. Applicant argues that Broughton doesn't disclose "the altering of the pixel value of the plurality of pixels of at least one second portion segment of the plurality of segments of the second portion based on the altering of the pixel value of the plurality of pixels of the at least one first portion segment of the first portion, the at least one second portion segment not including the at least one first portion segment." (See Remarks page 8 paragraph 2).

The Examiner respectfully disagrees. Broughton teaches splitting the viewing area of a screen into multiple segments to achieve a higher data rate. In an NTSC video signal which contains two fields per frame, each segment of the screen contains two fields. Therefore, according to the NTSC modulation scheme of Broughton that was discussed in the response to the arguments of claim 56 above, lines of a field in a segment of the screen will be modulated with a higher luminance value and lines of the second field in that segment will be modulated with a complementary lower luminance.

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The lines of a field are inherently comprised of pixels, therefore when Broughton discloses increasing or decreasing the luminance of a line, he is also inherently increasing or decreasing the luminance (pixel value) of the plurality of pixels in the modulated line.

Therefore Broughton discloses altering of the pixel value (luminance) of the plurality of pixels (plurality of pixels in a line) of at least one second portion (second field) segment (in a screen segment) of the plurality of segments of the second portion based on the altering (increasing or decreasing) of the pixel value (luminance) of the plurality of pixels of the at least one first portion (first field) segment of the first portion. The at least one second portion segment not including the at least one first portion segment (in the NTSC standard the two fields in a frame are interlaced and therefore are separate (as opposed to a non interlaced frame, where the whole frame is made up of a single field)).

Applicant states "Broughton therefore discloses independent encoding in the multiple regions of the viewing area." The Examiner would like to point out that the applicants own invention discloses independent encoding in the multiple regions of the viewing area as shown in Fig. 13 where a field is segmented into four segments (see [0047]) and inherently the region of the viewing area is segmented into multiple segments. The applicant also discloses in Fig. 13 that the multiple regions of the viewing area are independently encoded (one segment of field one can be encoded a 1

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or a 0, regardless of the encoding of another segment of the same field in the same frame). Similarly Broughton discloses that the data rate can be increased by the division (segmentation) of the viewing area 14c unto multiple regions, each of which is subliminally modulated to encode one or more binary bits of data.”

Further, claim 50 doesn't preclude using multiple transducers, detecting and decoding data in parallel (disclosed in Broughton Col. 7 ll. 50-57).

2. Applicant's arguments with respect to claims 57-59, 72, 73, 81-883, and 93 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections – 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 50, 56-59, 72-73, and 92-97 are rejected under 35 U.S.C. 102(b) as being anticipated by Broughton (of record).**

Claim 50:

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Broughton discloses splitting a first portion (first field) and a second portion (second field) of a frame (NTSC frame, see col. 6 ll. 32-35) of a video signal into a plurality of segments (the viewing area is split into segments, the segments include lines from the first and seconds fields) (see “division of the viewing area 14c into multiple segments” col. 7 ll. 50-53 and “NTSC frame” see col. 6 ll. 32-35);

and altering (increasing or decreasing) the pixel value (altering luminance of a line inherently alters the luminance of the pixels in that line) of the plurality of pixels of at least one first portion segment (first field) of plurality of segments of the first portion (the first field is split into the number of segments that the viewable screen 14c is split as discussed above) (see “raised luminance lines” col. 6 ll. 36-56);

and altering the pixel luminance value of the plurality of pixels of at least one second portion segment (the lines of the second field that are in the screen segment with the modulated lines of the first field) of plurality of segments of the second portion based on the altering of the pixel value of the plurality of pixels of the at least one first portion segment of the first portion (see “complementary, alternate lines...somewhat lower luminance” col. 6 ll. 36-56), wherein the overall average luminance is preserved, col. 6 ll. 57-68)

the at least one second portion segment not including the at least one first portion segment (in the NTSC standard the two fields in a frame are interlaced and therefore

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are separate (as opposed to a non interlaced frame, where the whole frame is made up of a single field)),

wherein the altering of the pixel value of the first portion and the second portion modulates the video signal with auxiliary data (a binary 1 or 0) (see col. 7 ll. 1-4).

Claim 56:

Broughton discloses obtaining a frame of a video signal from a display device (by means of a photo transducer diode 18); and

determining whether auxiliary data is present in the frame by performing a field comparison (by means of a level comparator 66) on a plurality of segments of a first field and a plurality of corresponding segments of a second field for the frame (when the viewing area is divided, please see the "Response to Arguments" paragraphs 5-6 above).

Claim 57:

Broughton discloses wherein the field comparison includes:

Subtracting intensity (looking for a difference in luminance intensity by means of a level comparator 66) of the plurality of corresponding segments of the second field from the plurality of segments of the first field (segmented NTSC viewing area) (see fig. 3 which

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shown a level comparator receiving signals from an optical transducer 18; see also col. 8 ll. 25-44 which discuss that the level comparator 66 detects luminance modulation by looking for a difference in luminance in adjacent lines (this example however relates to a non-interlaced frame where adjacent lines are of one field as shown in fig. 2B. As discussed previously Broughton discloses that his method of modulation can be applied to an NTSC frame where alternate lines within consecutive fields are modulated and therefore the level comparator would be comparing adjacent modulated lines from two separate fields in a frame, please see "Response to Arguments").

Claim 58:

Broughton discloses decoding a logic one as the auxiliary data when a segment of the first field is encoded (increased luminance) and a corresponding segment of the second field is not encoded (decreased luminance) (see "addition" or "removal" of a (luminance) subcarrier and "visé versa", col. 3 lines 8-11); and

decoding a logic zero as the auxiliary data when the segment of the first field is not encoded ("removal of subcarrier" which implies the lowering or removal of luminance, col. 3 lines 8-11) and the corresponding segment of the second field is encoded (raising the luminance of the second field to complement the removal of the luminance of the first field so that "the overall average luminance of, and contrast between, the video features and the background within viewing area 14c are preserved" col. 6 ll. 57-68)

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(see “addition” or “removal” of a (luminance) subcarrier and “vise versa”, col. 3 ll. 8-11);.

Claim 59:

decoding a logic one as the auxiliary data when a corresponding segment of the second field is encoded and a segment of the first field is not encoded; and

decoding a logic zero as the auxiliary data when the corresponding segment of the second field is not encoded and the segment of the first field is encoded (see “vise versa col. 3 ll. 8-11).

Claim 72:

Broughton discloses the benefit of providing “interactive video educational and entertainment apparatus that permits the user to interact with a television program in real time (see col. 2 lines 18-22 and 33-35).

Claim 73:

Broughton discloses the method of claim 72, wherein the benefit is textual Information (see “(ASCII) text” col. 11 ll. 16-19).

Claim 92:

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Broughton discloses wherein the first portion is a first field of the frame and the second portion is a second field of the frame (see “consecutive fields” according to the NTSC standard, col. 6 ll. 31-35).

Claim 93:

Broughton discloses the division of the viewing area to yield higher data rates (see Col. 7 ll. 50-53). Dividing the viewing area by two or three or four...(whole numbers) would yield that the viewing area is split into equal sized segments, which reads on “wherein the plurality of segments is split into equal sized segments.”

Claim 94:

Broughton discloses wherein the pixel value is intensity (luminance intensity, col. 6 ll. 62-68).

Claim 95:

Please see the rejection of claim 92.

Claim 96:

Broughton discloses wherein a particular segment of the plurality of segments of the first portion and the second portion represents a bit of data (Col. 7 ll. 50-53).

Claim 97:

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Broughton discloses wherein the altering of the plurality of pixels of the at least one first portion segment is encoded in a pixel pattern, further comprising: altering the plurality of pixels of the at least one first portion segment of the second portion in an inverse pixel pattern to the pixel portion (see “pattern generator” col. 13 ll. 25-32).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 81 is rejected under 35 U.S.C. 103(a) as being unpatentable over Broughton in view of J.D. Neal (hereinafter referred to as Neal) (Hardware Level VGA and SVGA Video Programming Information Page).

Claim 81:

Broughton discloses the method of performing a field comparison as discussed in the rejection of claim 57.

Broughton doesn't disclose seeking and synchronizing to a vertical retrace period of the video signal,

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wherein the determining of whether the auxiliary data is present is in accordance with the synchronizing to the vertical retrace period.

Neal, an inventor from the same or a similar field, discloses that the vertical retrace period is useful for determining the end of a display period, which can be used by applications that need to update the display every period such as when doing animation (see “Monitoring Timing”).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of modulating a video signal with data and of performing a field comparison as disclosed by Broughton with the method of seeking and synchronizing to a vertical retrace period because it would have allowed for the use of the modulated auxiliary data by “applications that need to update the display every period such as when doing animation” as disclosed by Neal. This would have allowed entertainment devices that display animation based on the received modulated auxiliary data to display the animation correctly (wherein determining whether auxiliary data is present is in accordance with the synchronizing to the vertical retrace period would have enabled entertainment device to display animation that is synchronized to the field/frame of the television picture).

Allowable Subject Matter

7. Claims 82 and 83 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SARI SAWAGED whose telephone number is (571)270-5085. The examiner can normally be reached on Mon-Thurs, 9:00AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANDREW KOENIG can be reached on (571) 272-7296. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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